REMARKS

The Amendment

Claim 1 is amended to recite a transgenic host plant. Support for the amendment can be found in Claim 16 as filed. Claim 1 is also amended to recite the steps of harvesting the plant and isolating the desired protein. Support for the amendment can be found, for example, at page 17, second full paragraph.

All the other amendments merely correct the antecedent basis or clarify the meaning of the claim.

No new matter is added in any of the above amendments. The Examiner is requested to enter the amendments and re-consider the application.

The Response

35 U.S.C. §112, First Paragraph, Enablement Rejection

Claims 1, 2, 4, 6-8, 10-14, and 16-18 are rejected under 35 U.S.C. §112, first paragraph. The Examiner states that the specification, while being enabling for a method of obtaining an scFv antibody protein from a transgenic potato, wherein the transgenic potato contains an scFv antibody protein coding sequence under the control of the GapC4 promoter, the GapC4 promoter being inducible by anaerobic conditions, harvesting pieces of potato and then exposing them to anaerobic conditions for a period of time of 40 hours, allegedly does not reasonably provide enablement for the broad scope of the claims.

The Examiner states that Applicants claim all host organisms, but Applicants give no guidance for any organism other than plants, specifically the dicot potato plant. Applicants have amended the claims to recite a transgenic host plant.

The Examiner also states that Applicants claim all chemical inductors, but teach only the presence of anaerobic conditions (lack of oxygen) as being the chemical inductor. Applicants do not agree with the Examiner. Many of the inductor that the Examiner refers to, for example light induction, heat shock, circadian, and wound induction, are not inductors that should be used via a

gas phase. As to the inductors that can be applied via a gas phase, the specification (pages 7 and 8) has disclosed a variety of suitable inductors, e.g., ethylene or RH5992.

The Examiner states that Applicants claim all inducible promoters, but teach only the maize GapC4 promoter. The support for the promoters other than the GapC4 promoter can be found in the paragraph bridging pages 9 and 10 of the specification, which lists promoters with some of them apparently being inducible by inductors supplied via the gas phase, e.g. the Adh1 promoter from corn and the AlcA prmoter from A. nidulans. Moreover, Gatz and Lenk, Trends in Plant Science 3 (1998), 352-358) have already described many examples of inducer/promoter systems that are useful for the present application (see specification at page 8). In conclusion, before the priority date of the present application, a large number of suitable inducer/promoter systems were known, but not their use in a post-harvest expression system according to the present invention.

The Examiner states that no examples of use of inducible recombinase systems are taught in the specification. However, Example 2 has shown recombination-mediated post-harvest production of protein in transgenic potatoes. Example 2 describes in detail the cassette encoding the scFv antibody with the control of the expression by the FLP-recombinase LBD system (with reference to WO 95/00555). Example 2 also describes how the transgenic potato plants were obtained, and how the expression of the scFv antibody was detected. Example 2 further shows that no scFv antibody was produced before the samples were contacted with the inductor estradiol, but a significant amount of scFv antibody was produced after the samples were contacted with estradiol.

With the reasons stated above, Applicants request the Examiner to withdraw the 35 U.S.C. §112, first paragraph rejection of Claims 1, 2, 4, 6-8, 10-14, and 16-18.

35 U.S.C. §102(e) Rejection

Claims 1, 2, 4, 6-8, 10 and 16-18 are rejected under 35 U.S.C. §102(e) over U.S. Patent No. 6,194,201. The rejection is traversed because the reference does not teach (a) harvesting the host plant, (b) contacting the harvested plant with an inductor, or (c) isolating the desired protein.

The Examiner interprets the '201 Patent as teaching an anaerobic post-harvest production system in column 3, lines 55-61. However, nowhere in this document an anaerobic **post-harvest** production system is described. The example in column 3 provides for induction of the maize GapC4 promoter under anaerobic conditions but does not target any post-harvest expression. The reference describes that "plant tissue is incubated in air-tight glass container (Merck) together with Anaerocult A (Merck) for at least 12 hours". The reference teaches whole, intact plant tissue, and does not teach that the plant tissue has been harvested and the harvested plant tissue is then contacted with an inductor. Applicants submit that anaerobic conditions do occur with whole plants (the '201 Patent). Furthermore, the need for harvesting a plant tissue in order to enable anaerobic induction of the promoter in the '201 Patent would have completely counteracted the intended antibacterial resistance system of the reference as bacterial infection occurs in the field on whole alive plants.

Moreover, the '201 Patent does not teach a step of isolating the desired protein. The '201 Patent discloses that for measuring the expression of the T4 lyszyme gene, a Northern blot analysis was carried out after the whole RNA had been isolated (see column 4, lines 8 to 19). Further studies regarding the induction of gene expression involves the examination of mazerated tissue (column 4, lines 29 to 44). The '201 Patent does not teach the isolation of the recombinant protein from the transgenic potatoes. The reason why the isolation of the foreign protein is not disclosed in the '201 Patent is that the reference merely teaches a method for producing transgenic plants which are resistant to particular bacteria, and is not concerned with a plant expression system for the recombinant production of large amounts of foreign proteins. Because the '201 Patent is dealing with a completely different issue, thus it does not require the isolation of recombinant produced protein from a plant.

Therefore, the 35 U.S.C. §102(e) rejection of Claims 1, 2, 4, 6-8, 10 and 16-18 should be withdrawn.

35 U.S.C. §102(b) Rejection

Claims 1, 2, 4, 6-8, 10 and 16-18 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Kohler, *et al.* (The Plant Journal, 10:175-183, (1996). The Rejection is traversed because the reference does not teach (a) harvesting the host plant, or (b) contacting the harvested plant with an inductor.

Kohler, *et al.* use intact plants/seedlings for anaerobic induction. However, the Examiner states that a post-harvest expression has been used in Kohler, *et al.* It is necessary to note that tobacco seedlings are full intact tobacco plants that are grown either in vitro or in soil from tobacco seeds. Kohler, *et al.* do not teach harvesting a plant. The two cited paragraphs (paragraphs 5 and 6 of page 182) do not describe harvesting a plant tissue, or contacting the harvested plant with an inductor.

Therefore, the 35 U.S.C. §102(b) rejection of Claims 1, 2, 4, 6-8, 10 and 16-18 should be withdrawn.

35 U.S.C. §103 (a) Rejection

Claims 1, 2, 4, 6-8, 10-14 and 16-18 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kohler, *et al.* in view of WO 95/00555.

Kohler, *et al.* do not teach a post-harvest production. WO 95/00555 merely describes the recombinase LBD system; it does not describe post-harvest production of a foreign protein. Therefore, the combination of the two references does not produce the claimed invention.

In addition, WO 95/00555 is entirely silent as regards the possibility to use the recombinase LBD system in plants. WO 95/00555 only describes the mammalian cell system, it is unclear whether this system is also useful for controlling gene expression in plants.

The present invention provides a post-harvest production system for a desired protein. The present invention solves the technical problems of negative effects on the host organisms. None of the cited prior art has taught or suggested a post-harvest plant production system for a desired protein. Therefore, the 35 U.S.C. §103(a) rejection of Claims 1, 2, 4, 6-8, 10-14 and 16-18 should be withdrawn.

CONCLUSION

Applicants believe that the application is in good and proper conditions for allowance. Early notification of allowance is earnestly solicited. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is encouraged to call the undersigned.

Respectfully submitted,

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